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EXAMINER
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ART UNIT	PAPER NUMBER
2644	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)	
Office Action Summary	09/886,958	DOWLING ET AL.	
	Examiner	Art Unit	
	Andrew C Flanders	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _21 June 2001_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
  closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-93_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-93_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _24 January 2002_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
     application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _2/22/02, 8/19/04_.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1 – 3, 5 – 7, 9 – 17, 20 - 22, 24, 25, 27 – 32, 92 and 93 are rejected

under 35 U.S.C. 103(a) as being unpatentable over Kiltz (U.S. Patent 5,191,319).

3.   Regarding Claims 1, 20 and 92, Kiltz discloses a decoder that receives a digital

audio input (fig. 1 element 70) (i.e. receiving an audio input in digital form), the decoder

operates on the multiple binary signal to divide the audio frequency spectrum

represented by these signals into a plurality of contiguous frequency bands (col. 4 lines

43 – 46) (i.e. digitally processing the audio input to determine at least one characteristic

of the audio input) and activation of one or more lamp driver circuits to activate a

plurality of colored light sources (LEDs) according to a preselected assignment of light

color to each audio frequency band defined by the decode logic (col. 4 lines 56 – 65).

Kiltz uses colored light sources but does not explicitly disclose LEDs as these sources.

It would have been obvious to one of ordinary skill in the art to use LEDs as the colored

light sources. LEDs are merely one of many various implementations of colored light

sources and their use would not require inventive skill (also see Drago's use of LEDs in

a similar invention, US 5,461,188 as cited in the IDS) (i.e. executing the lighting

program to generate control signals to control the plurality of LEDs and during execution

of the lighting program in the act (C), generating at least one of the control signals

based at least in part on the at least one characteristic of the audio input).

4.   Regarding Claims 2 and 21, in addition to the elements stated above regarding

claims 1 and 20, Kiltz further discloses receiving an analog music signal (Fig. 1 element

2) and converting it to a digital signal with an analog to digital converter (Fig. 1 element

60) (i.e. wherein the act (A) includes an act of receiving the audio input in analog form

and converting the audio input to digital form).

5.   Regarding Claims 3 and 22, in addition to the elements stated above regarding

claims 1 and 20, Kiltz further discloses the decoder operates on the multiple binary

signal to divide the audio frequency spectrum represented by these signals into a

plurality of contiguous frequency bands (col. 4 lines 43 – 46) (i.e. wherein the act (B)

includes an act of performing a frequency transformation of the audio input to determine

an activity level within at least one frequency band, and wherein the at least one

characteristic of the audio input relates to the activity level within the at least one

frequency band).

6.   Regarding Claims 5, and 24, in addition to the elements stated regarding claims

1 and 20, Kiltz further discloses circuits responsive to audio signal amplitude cause the

display brightness to vary (abstract) (i.e. wherein the act (b) includes an act of

determining a volume of the audio input, and wherein the at least one characteristic of

the audio input relates to the volume).

7.   Regarding Claims 6 and 25, in addition to the elements stated above regarding claims 1 and 20, Kiltz further discloses each lamp driver controls the brightness output of a single light source in accordance with the audio amplitude envelope signal (col. 4 lines 57 – 60) (i.e. wherein the act (B) includes an act of determining an intensity of the audio input, and wherein the at least on characteristic of the audio input relates to the intensity).

8.   Regarding Claim 7, in addition to the elements stated above regarding claim 1, Kiltz further discloses that the music source can be any means by which audio information is translated into electronic signals (col. 3 lines 26 – 31). Kiltz does not explicitly state the audio is part of a video signal, however, Examiner takes official notice that composite audio and video signals are well known in the art. Moreover, the source of the audio does not affect the scope of the invention and thus is viewed as intended use (i.e. wherein the act (A) includes an act of receiving the audio as part of an audio/video signal)

9.   Regarding Claims 9 and 27, in addition to the elements stated above regarding claims 1 and 20, Kiltz further discloses each lamp driver controls the brightness output of a single light source in accordance with the audio amplitude envelope signal and the audio frequency band selected by the decode logic and activation of one or more lamp driver circuits to activate a plurality of colored light sources (LEDs) according to a preselected assignment of light color to each audio frequency band defined by the decode logic (col. 4 lines 49 – 65) (i.e. wherein the act (C) includes an act of executing a lighting program having at least one variable that has an input value, and wherein the

act (D) includes an act of providing the at least one characteristic of the audio input as the input value of the at least one variable)

10.   Regarding Claims 10 and 28, in addition to the elements stated above regarding claims 1 and 20, Kiltz discloses a table of properties disclosing which lights are on when a certain frequency band is present (Fig. 6). It is obvious that as the frequency changes, so do the lighting schemes (i.e. wherein the lighting program is a first lighting program and wherein the method further includes an act of, during execution of the first lighting program in the act (C), switching to execution of a second lighting program in response to the at least one characteristic of the audio input).

11.   Regarding Claims 11 and 29, in addition to the elements stated above regarding claims 1 and 20, Kiltz further discloses each lamp driver controls the brightness output of a single light source in accordance with the audio amplitude envelope signal (col. 4 lines 57 – 60) (i.e. during execution of the lighting program in the act (C), assigning an effect to at least one of the plurality of LEDs based at least in part on the at least one characteristic of the audio input).

12.   Regarding Claims 12 and 30, in addition to the elements stated above regarding claims 1 and 20, Kiltz further discloses each lamp driver controls the brightness output of a single light source in accordance with the audio amplitude envelope signal (col. 4 lines 57 – 60) (i.e. during execution of the lighting program in the act (C), determining a parameter of at least one effect assigned to at least one of the plurality of LEDs based at least in part on the at least one characteristic of the audio input).

13.   Regarding Claim 13, in addition to the elements stated above regarding claim 1,

Kiltz further discloses a gain to brightness transfer characteristic (fig. 2B) and a

Frequency to color table (fig. 6) (i.e. wherein the method further includes an act of

providing a cue table that identifies various actions to be taken during execution of the

lighting program in response to at least two inputs received at the cue table, and

wherein the act (D) includes acts of: providing at least two characteristics of the audio

input as inputs to the cue table) and each lamp driver controls the brightness output of a

single light source in accordance with the audio amplitude envelope signal and the

audio frequency band selected by the decode logic and activation of one or more lamp

driver circuits to activate a plurality of colored light sources (LEDs) according to a

preselected assignment of light color to each audio frequency band defined by the

decode logic (col. 4 lines 49 – 65) (i.e. during execution of the lighting program,

generating at least one of the control signals in response to an output of the cue table).

14.   Regarding Claim 14, in addition to the elements stated above regarding claim 1,

Kiltz further discloses a gain to brightness transfer characteristic (fig. 2B) (i.e. wherein

the lighting program performs a mapping from the at least one characteristic of the

audio input to the at least one of the control signals), a gain to brightness transfer

characteristic (fig. 2B) and a Frequency to color table (fig. 6) (i.e. wherein the method

further includes an act of providing a cue table that identifies various actions to be taken

during execution of the lighting program in response to at least two inputs received at

the cue table, and wherein the act (D) includes acts of: providing at least two

characteristics of the audio input as inputs to the cue table) and each lamp driver

controls the brightness output of a single light source in accordance with the audio

amplitude envelope signal and the audio frequency band selected by the decode logic

and activation of one or more lamp driver circuits to activate a plurality of colored light

sources (LEDs) according to a preselected assignment of light color to each audio

frequency band defined by the decode logic (col. 4 lines 49 – 65) (i.e. during execution

of the lighting program, changing the mapping performed by the lighting program in

response to an output of the cue table).

15.   Regarding Claims 15 and 93, in addition to the elements stated above regarding

claims 1 and 20, Kiltz further discloses a Frequency to color table with the frequency

divided into ranges (fig. 6) (i.e. wherein at least one characteristic of the audio signal

includes at least first and second characteristics) the audio frequency band selected by

the decode logic and activation of one or more lamp driver circuits to activate a plurality

of colored light sources (LEDs) according to a preselected assignment of light color to

each audio frequency band defined by the decode logic (col. 4 lines 49 – 65) (i.e.

wherein the lighting program performs a mapping function from the first characteristic of

the audio input to the at least one of the control signals and wherein the act (D) includes

an act of, during execution of the lighting program in the act (C), changing the mapping

function performed by the lighting program in response to the second characteristic of

the audio input).

16.   Regarding Claims 16 and 31, in addition to the elements stated above regarding

claims 15 and 93, Kiltz discloses a table of properties disclosing which lights are on

when a certain frequency band is present (Fig. 6). It is obvious that as the frequency

changes, so do the lighting schemes (i.e. wherein the lighting program is a first lighting program and wherein the method further includes an act of, during execution of the first lighting program in the act (C), switching to execution of a second lighting program in response to the at least one characteristic of the audio input).

17.   Regarding Claims 17 and 32, in addition to the elements stated above regarding claims 1 and 20, Kiltz further discloses a decoder that operates on the multiple binary signal to divide the audio frequency spectrum represented by these signals into a plurality of contiguous frequency bands (col. 4 lines 43 – 46) (i.e. wherein the act (B) includes an act of digitally processing the audio input to determine a plurality of characteristics of the audio input) and activation of one or more lamp driver circuits to activate a plurality of colored light sources (LEDs) according to a preselected assignment of light color to each audio frequency band defined by the decode logic (col. 4 lines 56 – 65) (i.e. wherein the act (D) includes an act of, during execution of the lighting program in the act (C), generating the control signals based at least in part on the plurality of characteristics of the audio input).

18.   Claims 4, 18, 19, 23, 33 – 40, 42 – 51, 53 – 60, 62 – 67, 69 –74, 76 - 82 and 84 - 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiltz (U.S. Patent 5,191,319) in view of Drago (U.S. Patent 5,461,188).

19.   Regarding Claims 4, 23 and 38, in addition to the elements stated regarding claims 1, 20 and 35, Kiltz discloses varying a lighting display based upon various audio properties (abstract). Kiltz does not disclose using the beat as an audio property. Drago discloses a system includes a multiplicity of light sources such as light emitting diodes

(LEDs) that may be of multiple colors and illuminate according to a program executed in synchrony with the rhythmic beat of either an independent internal or external music or sound program (col. 2 lines 49 – 58) (i.e. wherein the act (B) includes an act of determining a beat of the audio input, and wherein the at least one characteristic of the audio input relates to the beat). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Drago's beat illumination on Kiltz's audio lighting display. Both inventions alter lighting effects based upon audio calculations and adding a feature such as Drago's beat does not involve the excise of inventive skill.

20.   Regarding Claims 18, 33, 49, 59, 66, 73 and 81, in addition to the elements stated above regarding claims 1, 20, 35, 57, 64, 71 and 78, Drago discloses a system includes a multiplicity of light sources such as light emitting diodes (LEDs) that may be of multiple colors and illuminate according to a program executed in synchrony with the rhythmic beat of either an independent internal or external music or sound program (col. 2 lines 49 – 58) with a user interface circuit (fig. 1 element 20) (i.e. wherein the act (C) includes an act of executing the lighting program on a device coupled to at least one user interface), Through the user interface, via an interface signal, the sound and light programs to be processed by the CPU, can be selected, edited or additional programs added until the capacity of the program memory circuit is exceeded (col. 8 lines 20 – 25) (i.e. wherein the method further includes an act of, during execution of the lighting program in act (C), generating at least one of the control signals based at least in part on user input provided via the at least one user interface). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Drago's interface on

Kiltz's audio lighting display. Both inventions alter lighting effects based upon audio

calculations and adding a feature such as Drago's interface to adjust the parameters of

the lighting output does not involve the excise of inventive skill.

21.   Regarding Claims 19, 34, 50, 55, 60, 67, 74 and 82, in addition to the elements

stated regarding claims 1, 20, 35, 51, 57, 64, 71 and 78, Kiltz further discloses a gain to

brightness transfer characteristic (fig. 2B) (i.e. wherein the lighting program performs a

mapping function from the at least one characteristic of the audio input to the at least

one of the control signals). Kiltz does not disclose a user interface. Drago discloses a

system includes a multiplicity of light sources such as light emitting diodes (LEDs) that

may be of multiple colors and illuminate according to a program executed in synchrony

with the rhythmic beat of either an independent internal or external music or sound

program (col. 2 lines 49 – 58) with a user interface circuit (fig. 1 element 20) (i.e.

wherein the act (C) includes an act of executing the lighting program on a device

coupled to at least one user interface) and through the user interface, via an interface

signal, the sound and light programs to be processed by the CPU, can be selected,

edited or additional programs added until the capacity of the program memory circuit is

exceeded (col. 8 lines 20 – 25) (i.e. wherein the method further includes an act of,

changing the mapping function performed by the lighting program in response to an

input received from the user interface). Motivation to combine these elements is given

above regarding claim 19.

22.   Regarding Claims 35 and 51, Kiltz discloses a decoder that receives a digital

audio input (fig. 1 element 70) (i.e. at least one input to receive an audio input), the

decoder operates on the multiple binary signal to divide the audio frequency spectrum represented by these signals into a plurality of contiguous frequency bands (col. 4 lines 43 – 46) (i.e. an audio decoder to digitally process the audio input to determine at least one characteristic of the audio input) and activation of one or more lamp driver circuits to activate a plurality of colored light sources (LEDs) according to a preselected assignment of light color to each audio frequency band defined by the decode logic (col. 4 lines 56 – 65). Kiltz uses colored light sources but does not explicitly disclose LEDs as these sources. It would have been obvious to one of ordinary skill in the art to use LEDs as the colored light sources. LEDs are merely one of many various implementations of colored light sources and their use would not require inventive skill (also see Drago's use of LEDs in a similar invention, US 5,461,188 as cited in the IDS) (i.e. at least one controller, coupled to the audio decoder and the at least one storage medium, to execute the lighting program to generate control signals to control the plurality of LEDs, wherein the at least one controller generates at least one of the control signals based at least in part on the at least one characteristic of the audio input). Kiltz does not explicitly state at least one storage medium to store the lighting program. Drago discloses a program memory circuit (fig. 1 element 16) (i.e. at least one storage medium to store the lighting program). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Drago's program memory circuit on Kiltz's audio lighting display. Both inventions alter lighting effects based upon audio calculations and adding a feature such as Drago's program memory circuit to store the parameters of intensity and frequency changes would have been obvious.

Integrating into one small circuit with a program is well known in the art and would be

desirable to reduce the circuitry required for Kiltz thereby reducing the size and cost of

production.

23.   Regarding Claim 36, in addition to the elements stated above regarding claim 35,

Kiltz further discloses receiving an analog music signal (Fig. 1 element 2) and

converting it to a digital signal with an analog to digital converter (Fig. 1 element 60) (i.e.

an analog to digital converter, coupled to the at least one input, to convert the audio

input from analog form to digital form).

24.   Regarding Claim 37, in addition to the elements stated above regarding claim 35,

Kiltz further discloses the decoder operates on the multiple binary signal to divide the

audio frequency spectrum represented by these signals into a plurality of contiguous

frequency bands (col. 4 lines 43 – 46) (i.e. wherein the audio decoder performs a

frequency transformation of the audio input to determine an activity level within at least

one frequency band, and wherein the at least one characteristic of the audio input

relates to the activity level within the at least one frequency band).

25.   Regarding Claim 39, in addition to the elements stated regarding claim 35, Kiltz

further discloses circuits responsive to audio signal amplitude cause the display

brightness to vary (abstract) (i.e. wherein the decoder determines a volume of the audio

input, and wherein the at least one characteristic of the audio input relates to the

volume).

26.   Regarding Claim 40, in addition to the elements stated above regarding claim 35,

Kiltz further discloses each lamp driver controls the brightness output of a single light

source in accordance with the audio amplitude envelope signal (col. 4 lines 57 – 60) (i.e. wherein the audio decoder determines an intensity of the audio input, and wherein the at least one characteristic of the audio input relates to the intensity).

27.   Regarding Claims 42 and 53, in addition to the elements stated above regarding claims 35 and 51, Kiltz further discloses each lamp driver controls the brightness output of a single light source in accordance with the audio amplitude envelope signal and the audio frequency band selected by the decode logic and activation of one or more lamp driver circuits to activate a plurality of colored light sources (LEDs) according to a preselected assignment of light color to each audio frequency band defined by the decode logic (col. 4 lines 49 – 65) (i.e. wherein the lighting program has at least one variable that has an input value, and wherein the at least one controller provides the at least one characteristic of the audio input as the input value of the at least one variable).

28.   Regarding Claim 43, in addition to the elements stated above regarding claim 35, Kiltz discloses a table of properties disclosing which lights are on when a certain frequency band is present (Fig. 6). It is obvious that as the frequency changes, so do the lighting schemes (i.e. wherein the lighting program is a first program, wherein the at least one storage medium further stores a second lighting program, and wherein the at least one controller, during execution of the first lighting program, switches to the execution of the second lighting program in response to the at least one characteristic of the audio input).

29.   Regarding Claim 44, in addition to the elements stated above regarding claim 35, Kiltz further discloses each lamp driver controls the brightness output of a single light

source in accordance with the audio amplitude envelope signal (col. 4 lines 57 – 60)

(i.e. wherein the at least one controller, during execution of the lighting program,

assigns an effect to at least one of the plurality of LEDs based at least in part on the at

least one characteristic of the audio input).

30.   Regarding Claim 45, in addition to the elements stated above regarding claim 35,

Kiltz further discloses each lamp driver controls the brightness output of a single light

source in accordance with the audio amplitude envelope signal (col. 4 lines 57 – 60)

(i.e. wherein the at least one controller, during execution of the lighting program,

determines a parameter of at least one effect assigned to at least one of the plurality of

LEDs based at least in part on the at least one characteristic of the audio input).

31.   Regarding Claim 46, in addition to the elements stated above regarding claim 1,

Kiltz further discloses a gain to brightness transfer characteristic (fig. 2B) and a

Frequency to color table (fig. 6) (i.e. wherein the at least one characteristic of the audio

signal includes at least first and second characteristics, wherein the method further

includes an act of providing a cue table that identifies various actions to be taken during

execution of the lighting program in response to at least two inputs received at the cue

table, and wherein the act (D) includes acts of: providing at least two characteristics of

the audio input as inputs to the cue table) and each lamp driver controls the brightness

output of a single light source in accordance with the audio amplitude envelope signal

and the audio frequency band selected by the decode logic and activation of one or

more lamp driver circuits to activate a plurality of colored light sources (LEDs) according

to a preselected assignment of light color to each audio frequency band defined by the

decode logic (col. 4 lines 49 – 65) (i.e. during execution of the lighting program, generating at least one of the control signals in response to an output of the cue table).

32.   Regarding Claims 47, 54, 58, 65, 72 and 80, in addition to the elements stated regarding claims 35, 51, 57, 64, 71 and 78, Kiltz further discloses a Frequency to color table with the frequency divided into ranges (fig. 6) (i.e. wherein at least one characteristic of the audio signal includes at least first and second characteristics) the audio frequency band selected by the decode logic and activation of one or more lamp driver circuits to activate a plurality of colored light sources (LEDs) according to a preselected assignment of light color to each audio frequency band defined by the decode logic (col. 4 lines 49 – 65) (i.e. wherein the lighting program performs a mapping function from the first characteristic of the audio input to the at least one of the control signals and wherein the at least one of controller, during execution of the lighting program, changes the mapping function performed by the lighting program in response to the second characteristic of the audio input)..

33.   Regarding 48, in addition to the elements stated above regarding claim 35, Kiltz discloses a table of properties disclosing which lights are on when a certain frequency band is present (Fig. 6). It is obvious that as the frequency changes, so do the lighting schemes (i.e. wherein the lighting program is a first lighting program, wherein the at least one storage medium further stores a second lighting program, and wherein the at least one controller, during execution of the first lighting program, switches to execution of a second lighting program in response to the at least one characteristic of the audio input).

34.   Regarding Claim 56, in addition to the elements stated above regarding claim 51,

Kiltz further discloses that the music source can be any means by which audio

information is translated into electronic signals (col. 3 lines 26 – 31). Kiltz does not

explicitly state the audio input is in MP3 format, however, Examiner takes official notice

that composite the MP3 format is well known in the art as well as programs to process

them. Moreover, the source of the audio does not affect the scope of the invention and

thus is viewed as intended use (i.e. wherein the second program processes an audio

input in MP3 format to determine at least one characteristic of the audio input, and

wherein the first program is a plug-in compatible with an application programming

interface provided by the second program).

35.   Regarding Claims 57, 64 and 71, Kiltz discloses a decoder that receives a digital

audio input (fig. 1 element 70) (i.e. receiving an audio input in digital form), the decoder

operates on the multiple binary signal to divide the audio frequency spectrum

represented by these signals into a plurality of contiguous frequency bands (col. 4 lines

43 – 46) (i.e. digitally processing the audio input to determine at least one characteristic

of the audio input) and activation of one or more lamp driver circuits to activate a

plurality of colored light sources (LEDs) according to a preselected assignment of light

color to each audio frequency band defined by the decode logic (col. 4 lines 56 – 65).

Kiltz uses colored light sources but does not explicitly disclose LEDs as these sources.

It would have been obvious to one of ordinary skill in the art to use LEDs as the colored

light sources. LEDs are merely one of many various implementations of colored light

sources and their use would not require inventive skill (also see Drago's use of LEDs in

a similar invention, US 5,461,188 as cited in the IDS) (i.e. executing the lighting

program to generate control signals to control the plurality of LEDs and during execution

of the lighting program in the act (C), generating at least one of the control signals

based at least in part on the at least one characteristic of the audio input). Kiltz also

does not explicitly disclose receiving an input from a timer and generating the control

signals based upon a timer. Drago discloses a system clock (fig. 1 element 14) (i.e. an

input from a timer and generating the control signals based upon a timer). Motivation to

combine Kiltz and Drago is given above regarding claim 35.

36.   Regarding Claims 62, 69, 76 and 84, in addition to the elements stated above

regarding claims 57, 64, 71 and 78, Kiltz further discloses a Frequency to color table

with the frequency divided into ranges (fig. 6), the audio frequency band selected by the

decode logic and activation of one or more lamp driver circuits to activate a plurality of

colored light sources (LEDs) according to a preselected assignment of light color to

each audio frequency band defined by the decode logic (col. 4 lines 49 – 65) (i.e. an act

of executing a lighting program having at least first and second variables that each has

an input value, and wherein the act (D) includes an act of providing the at least one

characteristic of the audio input as the input value of the first variable). Kiltz does not

disclose the second variable as an input from the timer. Drago discloses a pulse from

the system clock sequences the memory circuit that then simultaneously produces the

sound control signals and the light control signals in accordance with the audio and light

programs (col. 6 lines 1 – 5) (i.e. the input from the at least one timer as the input value

of the second variable. Motivation to combing Kiltz and Drago is given above regarding

claim 35.

37.   Regarding Claims 63, 70, 77 and 85, in addition to the elements stated above

regarding claims 57, 64, 71 and 78 Drago discloses a pulse from the system clock

sequences the memory circuit that then simultaneously produces the sound control

signals and the light control signals in accordance with the audio and light programs

(col. 6 lines 1 – 5) (i.e. wherein the lighting program is a first lighting program, and

wherein the method further includes an act of, during execution of the first lighting

program in the act (C), switching to execution of a second lighting program in response

to the input from the at least one timer).

38.   Regarding Claim 78, Kiltz discloses a decoder that receives a digital audio input

(fig. 1 element 70) (i.e. at least one input to receive an audio input), the decoder

operates on the multiple binary signal to divide the audio frequency spectrum

represented by these signals into a plurality of contiguous frequency bands (col. 4 lines

43 – 46) (i.e. an audio decoder to digitally process the audio input to determine at least

one characteristic of the audio input) and activation of one or more lamp driver circuits

to activate a plurality of colored light sources (LEDs) according to a preselected

assignment of light color to each audio frequency band defined by the decode logic (col.

4 lines 56 – 65). Kiltz uses colored light sources but does not explicitly disclose LEDs

as these sources. It would have been obvious to one of ordinary skill in the art to use

LEDs as the colored light sources. LEDs are merely one of many various

implementations of colored light sources and their use would not require inventive skill

(also see Drago's use of LEDs in a similar invention, US 5,461,188 as cited in the IDS) (i.e. at least one controller, coupled to the audio decoder and the at least one storage medium, to execute the lighting program to generate control signals to control the plurality of LEDs, wherein the at least one controller generates at least one of the control signals based at least in part on the at least one characteristic of the audio input). Kiltz does not explicitly state at least one storage medium to store the lighting program or a controller that bases signals off of a timer. Drago discloses a program memory circuit (fig. 1 element 16) (i.e. at least one storage medium to store the lighting program) and a pulse from the system clock sequences the memory circuit that then simultaneously produces the sound control signals and the light control signals in accordance with the audio and light programs (col. 6 lines 1 – 5) (i.e. one of the control signals based at least in part on the at least one characteristic of the audio input and an input from at least one timer). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Drago's program memory circuit on Kiltz's audio lighting display. Both inventions alter lighting effects based upon audio calculations and adding a feature such as Drago's program memory circuit to store the parameters of intensity and frequency changes would have been obvious. Integrating into one small circuit with a program is well known in the art and would be desirable to reduce the circuitry required for Kiltz thereby reducing the size and cost of production.

39.   Regarding Claim 79, in addition to the elements stated above regarding claim 78, Drago discloses a pulse from the system clock sequences the memory circuit that then

simultaneously produces the sound control signals and the light control signals in

accordance with the audio and light programs (col. 6 lines 1 – 5) (i.e. at least one timer).

40.   Regarding Claim 86, Kiltz discloses a decoder that receives a digital audio input

(fig. 1 element 70) (i.e. at least one input to receive an audio input), the decoder

operates on the multiple binary signal to divide the audio frequency spectrum

represented by these signals into a plurality of contiguous frequency bands (col. 4 lines

43 – 46) (i.e. an audio decoder to digitally process the audio input to determine at least

one characteristic of the audio input) and activation of one or more lamp driver circuits

to activate a plurality of colored light sources (LEDs) according to a preselected

assignment of light color to each audio frequency band defined by the decode logic (col.

4 lines 56 – 65). Kiltz uses colored light sources but does not explicitly disclose LEDs

as these sources. It would have been obvious to one of ordinary skill in the art to use

LEDs as the colored light sources. LEDs are merely one of many various

implementations of colored light sources and their use would not require inventive skill

(also see Drago's use of LEDs in a similar invention, US 5,461,188 as cited in the IDS)

(i.e. at least one controller, coupled to the audio decoder and the at least one storage

medium, to execute the lighting program to generate control signals to control the

plurality of LEDs, wherein the at least one controller generates at least one of the

control signals based at least in part on the at least one characteristic of the audio

input). Kiltz does not explicitly state a controller that bases signals off of a user

interface. Drago discloses through a user interface, via an interface signal, the sound

and light programs to be processed by the CPU, can be selected, edited or additional

programs added (col. 8 lines 20 – 23) (i.e. an input from a graphical user interface and generating at least one of the control signals based in part on the input from the graphical user interface). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Drago's program memory circuit on Kiltz's audio lighting display. Both inventions alter lighting effects based upon audio calculations and adding a feature such as Drago's program memory circuit to store the parameters of intensity and frequency changes would have been obvious. Integrating into one small circuit with a program is well known in the art and would be desirable to reduce the circuitry required for Kiltz thereby reducing the size and cost of production.

41.   Regarding Claim 87, Kiltz discloses a decoder that operates on the multiple binary signal to divide the audio frequency spectrum represented by these signals into a plurality of contiguous frequency bands (col. 4 lines 43 – 46) (i.e. determining at least one characteristic of the audio input) and activation of one or more lamp driver circuits to activate a plurality of colored light sources (LEDs) according to a preselected assignment of light color to each audio frequency band defined by the decode logic (col. 4 lines 56 – 65). Kiltz uses colored light sources but does not explicitly disclose LEDs as these sources. It would have been obvious to one of ordinary skill in the art to use LEDs as the colored light sources. LEDs are merely one of many various implementations of colored light sources and their use would not require inventive skill (also see Drago's use of LEDs in a similar invention, US 5,461,188 as cited in the IDS) (i.e. executing the lighting program to generate control signals to control the plurality of LEDs and during execution of the lighting program in the act (C), generating at least one

of the control signals based at least in part on the at least one characteristic of the audio

input). Kiltz does not disclose processing, information indicative of an audio signal to

generate a speaker-compatible signal indicative of the audio signal and transmitting the

speaker compatible signal to a speaker to generate audible sound indicative of the

audio signal). Drago discloses an audio transducer that passes audio program

information to an audio transducer (fig. 1) (i.e. processing information indicative of an

audio signal to generate a speaker compatible signal indicative of the audio signal and

transmitting the speaker compatible signal to a speaker to generate audible sound

indicative of the audio signal). Kiltz does not disclose processing on a computer,

however, it is obvious in the art to use a computer to perform various functions. It would

have been obvious to one of ordinary skill in the art to implement the elements above

within a standard personal computer. Motivation to combine Kiltz and Drago is given

above regarding claim 35.

42.   Regarding Claim 88, in addition to the elements stated above regarding claim 87,

Kiltz discloses a music source (Fig. 1) (i.e. processing information received from

another device, indicative of an audio signal to generate the speaker compatible signal).

43.   Regarding Claim 89, in addition to the elements stated above regarding claim 87,

Kiltz further discloses that the music source can be any means by which audio

information is translated into electronic signals (col. 3 lines 26 – 31). It was well known

at the time of the invention to store music on a computer readable medium and thus it

would have been obvious to use this as a source of music for Kiltz's invention (i.e. an

act of reading digital information, stored on a computer readable medium coupled to the

computer, indicative of the audio signal to generate the speaker-compatible signal).

44.   Regarding Claim 90, Drago discloses through this user interface 20, via an

interface signal, the sound and light programs to be processed by the CPU, can be

selected, edited or additional programs added (col. 8 lines 20 – 25) (i.e. providing a

graphical user interface (GUI) that displays information representative of the plurality of

LEDs, a plurality of lighting effects to be assigned thereto the at least at least one

characteristic of the audio input and selecting, based on at least one user input provided

via the GUI, at least one of the plurality of lighting effects to correspond to at least one

of the plurality of LEDs in response to the at least one characteristic of the audio input

and creating a lighting program, based on the at least one user input, for generating

control information for the plurality of LEDs).

45.   Regarding Claim 91, Kiltz discloses receiving a music source (Fig. 1) (i.e.

receiving an audio input), the decoder operates on the multiple binary signal to divide

the audio frequency spectrum represented by these signals into a plurality of contiguous

frequency bands (col. 4 lines 43 – 46) (analyzing the audio input to determine at least

one characteristic of the audio input). Drago discloses storing audio and light program

information (col. 6 lines 3 – 5) (i.e. storing information related to the at least one

characteristic of the audio input) producing the sound control signals and the light

control signals in accordance with the audio and light programs stored (col. 6 lines 3 –

4) (i.e. executing the lighting program, after completion of the act (C), to generate

control signals to control the plurality of LEDs and during execution of the lighting

program in act (D), reading the stored information and generating at lest one of the

control signals based at least in part on the at least one characteristic of the audio

input). Motivation to combine Kiltz and Drago is given above regarding claim 25.

46.   Claims 8 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kiltz (U.S. Patent 5,191,319) in view of Bohn Jr. (U.S. Patent 6,618,031).

47.   Regarding Claims 8 and 26, in addition to the elements stated above regarding

claims 1 and 20, Kiltz discloses lamp drivers (fig. 1 element 90 and Fig 4. element 90).

Kiltz does not disclose using pulse width modulation to drive the LEDs. Bohn Jr.

discloses that the on time of the PWM drive signal can be varied within each frame to

independently select the brightness of each LED (col. 5 lines 1 – 14) (i.e. wherein the

act (C) includes an act of transmitting pulse width modulated signals to the plurality of

LEDs to control a perceived intensity of each of the plurality of LEDs). It would have

been obvious to one of ordinary skill in the art at the time of the invention to use Bohn

Jr.'s PWM method as Kiltz's lamp drivers in order to use power more efficiently and to

control the intensity efficiently. Bohn Jr. discloses resistor current sources use more

power than the PWM method and the LED varies nonlinearly with both power supply

voltage variations and LED forward voltage variations (col. 1 lines 47 – 61).

48.   Claims 41, 52, 61, 68, 75 and 83 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kiltz (U.S. Patent 5,191,319) in view of Drago (U.S. Patent

5,461,188) in further view of Bohn Jr. (U.S. Patent 6,618,031).

49.   Regarding Claims 41, 52, 61, 68, 75 and 83, in addition to the elements stated

above regarding claims 35, 51, 57, 64, 71 and 78, Kiltz discloses lamp drivers (fig. 1

element 90 and Fig 4. element 90). Kiltz does not disclose using pulse width modulation to drive the LEDs. Bohn Jr. discloses that the on time of the PWM drive signal can be varied within each frame to independently select the brightness of each LED (col. 5 lines 1 – 14) (i.e. wherein the act (C) includes an act of transmitting pulse width modulated signals to the plurality of LEDs to control a perceived intensity of each of the plurality of LEDs). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Bohn Jr.'s PWM method on the Kiltz's and Drago combination's lamp drivers in order to use power more efficiently and to control the intensity efficiently. Bohn Jr. discloses resistor current sources use more power than the PWM method and the LED varies nonlinearly with both power supply voltage variations and LED forward voltage variations (col. 1 lines 47 – 61).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C Flanders whose telephone number is (703) 305-0381. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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